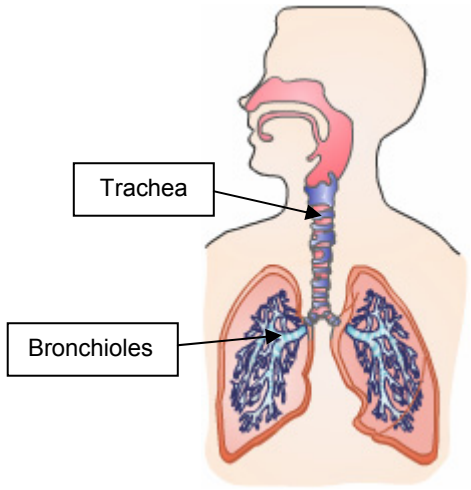
X-Plain
Lung Cancer
Reference Summary

Introduction

Lung cancer is the number one cancer killer of men and women. Over 165,000 people die of lung cancer every year in the United States.

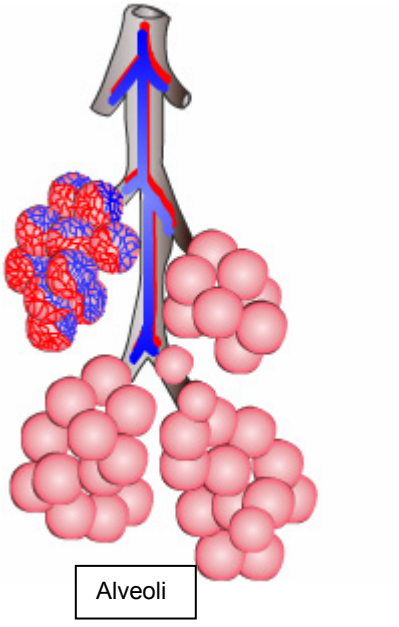


Most cases of lung cancer are related to cigarette smoking. Therefore, if you smoke, it is best to stop smoking as soon as possible.

This reference summary will help you to better understand lung cancer and the treatment options that are available.

Anatomy

Oxygen is vital for life. Without it, death occurs very rapidly. The lungs allow us to fill our blood with oxygen.



The air we breathe comes in close contact with the blood in the depth of the lungs. The blood then fills up with oxygen and releases unwanted carbon dioxide, CO_2.

When we breathe, the air goes through the mouth and nose.

From there, it goes to the air pipe, known as the trachea.

From the trachea it goes into an increasing number of smaller tubes, called bronchial tubes. Small balloon-like sacs called alveoli are at the end of the tubes.

The walls of the alveoli are very thin. On the other side of the walls small blood vessels exist. The very thin wall of

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the alveoli allows the oxygen to go into the bloodstream and also allows CO_2 to go from the blood to your lungs to be exhaled.

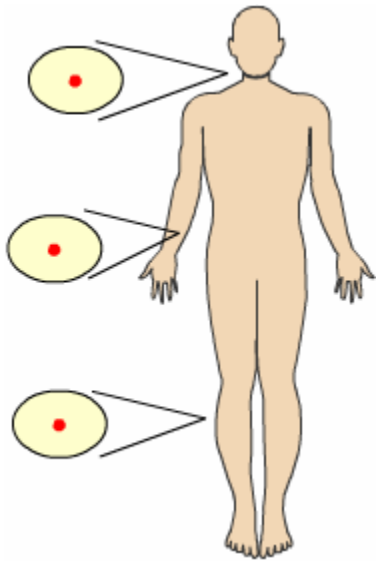
The inner lining of the bigger bronchial tubes secrete a special substance called mucus. The mucus helps trap dirt from the air. Mucus is continuously expelled from the lungs. Just like with saliva, mucus is often swallowed, without us needing to think about it.

Very small brushes, known as cilia, continuously push the mucus to the outside. The cilia are like the hairs, or bristles of a brush. If the mucus becomes sufficiently big, it is coughed out.

Cancer and Its Causes

The body is made up of billions of small cells. Together, many cells make up organs, like the lungs, the heart, or the bones. Usually, when the cells get old or damaged, they die and are replaced by new cells. Sometimes, cells continue to grow and divide when they aren't needed, causing an abnormal growth called a tumor.

There are two kinds of tumors. If the tumor does not invade nearby body parts, it is called a benign tumor or non-cancerous growth. Benign tumors are rarely life threatening. Benign tumors are not cancer.



If the tumor does invade and destroy nearby cells, it is called a malignant tumor or cancer. Cancer can be life threatening.

Cancerous cells may also spread to different parts of the body through direct invasion, or through blood and lymph channels.

Lymph is a nearly clear fluid produced by the body that drains waste from cells. It travels through special vessels and bean-shaped structures called lymph nodes.

Cancer treatments aim to kill or control cancerous cells.

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Cancers in the body are given names, depending on where they first began. Cancer that begins in the lungs will always be called lung cancer, even if it has spread to another place such as the liver, bones, or brain.

Although doctors can locate where a cancer started, the cause of cancer in a patient cannot usually be identified.

Cells contain hereditary, or genetic, materials called chromosomes. This genetic material controls the growth of the cell.

Cancer tends to run in families, so people with close relatives that have cancer should be examined regularly for any sign of it.

Cancer always develops from changes that occur in the chromosomes. When the genetic material in a cell becomes abnormal, it can lose the ability to control its growth.

Sudden changes in genetic material can occur for a variety of reasons. This tendency may be inherited.

Experts also agree that smoking tobacco, chewing tobacco and being exposed to tobacco smoke can all lead to lung cancer.

Exposure to chemicals or other factors in the environment, like pollution or asbestos (old wall insulation in homes), might increase cancer risk, too.

Symptoms And Their Causes

There are two main types of lung cancer: non-small cell and small cell. Non-small cell lung cancer is more common, slow growing, and does not spread to other organs rapidly. Small cell lung cancer is not as common as non-small cell. But it is fast growing, and spreads very rapidly to other organs.

Cigarette smoking or exposure to second-hand smoke causes the majority of lung cancer cases.

Cigarettes contain over 4000 chemicals; 40 of these chemicals can cause cancer. Smoking filtered or unfiltered cigarettes does not help prevent cancer. Chewing tobacco also causes cancer.

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Pipe and cigar smoking increase the risk of lung cancer, although not as severely as cigarette smoking.

Exposure to pollution, radioactive materials, asbestos and other products also increases the chance of developing lung cancer.

Stopping smoking and avoiding exposure to cancer-causing environments, like chemicals, lowers your risk of developing lung cancer, even after years of smoking.

Some of the symptoms of lung cancer include the following:

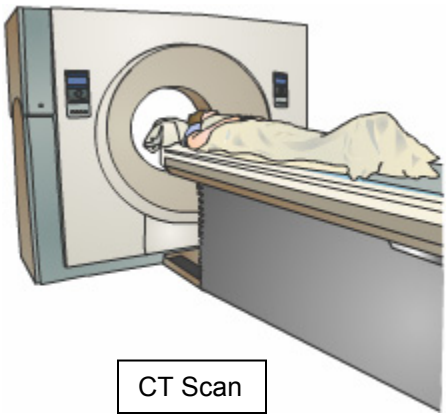
- Chronic cough, or cough with bloody sputum.
- Hoarseness
- Shortness of breath, chest pain, or wheezing
- Weight loss or loss of appetite

Other symptoms of lung cancer include:

- Swelling in the face or neck
- Repeated lung infections or bronchitis
- Fever
- General weakness - specifically in the shoulder, arm, or hand.

Diagnosis

Chest x-rays are very useful in determining whether there are any abnormalities in the lungs. Abnormal spots found during x-rays are called lesions.



CT Scan

A CAT scan of the lung, a more detailed x-ray of the lungs, helps determine the exact location of any lesions found on a chest x-ray.

A biopsy of the lung lesion is then done. This is a procedure where a small piece of the lesion is taken out to be checked by a pathologist. The pathologist helps determine if the lesion is cancerous or not.

The biopsy can be done one of two ways. One kind of biopsy is to insert a small needle in the lung from the outside of the body, using CAT scan images as a guide.

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The other way to do a lung biopsy is from the inside of the body, using a scope that the doctor inserts through the mouth.

If the lesion is found to be cancerous, the doctor will need more tests to see if the cancer has spread to other parts of the body, and to find out what stage the cancer is in. The further a cancer has spread, the higher the stage.

If it appears that the cancer has spread, further tests may be performed to determine the exact locations of the cancer. A bone scan, a special radiological exam, may be done to check the bones.

Your doctor may recommend a CAT scan to check for cancer that may have spread to the abdomen and pelvis areas. They may also recommend you get an MRI of the head to check for cancer that may have spread to your brain.

Blood tests may be necessary to check for anemia, liver, or kidney problems.

However, lung lesions may not turn out to be cancerous. A lung lesion may indicate an old or new infection in the lungs.

Lung lesions may also indicate benign tumors, as opposed to malignant tumors, which are cancerous. Benign tumors do not have cancer cells in them.

Treatment

The treatment of lung cancer depends on how advanced the cancer is. If the lung cancer has not spread and is relatively small, surgery may be indicated to take the cancer out.

Radiation therapy and chemotherapy may also be necessary to either try to cure the cancer or, at least, to slow it's growth.

Summary

Lung cancer is not a rare disease. Prevention of lung cancer is the most effective way to fight it. Not smoking is the single most important thing anybody can do to avoid lung cancer.

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